Planetary and Space Science

Volume Contents for Volume 47 (1999)

VOLUME CONTENTS

Planetary and Space Science
Volume 47

JANUARY/FEBRUARY

	Preface to a New Year of Planetary and Space Science 1
Smith, N. S., Gazeau, M.-C., Khelifi, A., Raulin, F.	**A combined experimental and theoretical study of the catalytic dissociation of methane by the photolysis of acetylene at 185 nm 3**
Skoglöv, E.	**Spin vector evolution for inner solar system asteroids 11**
Kamoun, P., Campbell, D., Pettengill, G., Shapiro, I.	**Radar observations of three comets and detection of echoes from one: P/Grigg-Skjellerup 23**
Carpino, M.	**Prospects in astrometry and orbital determination of minor bodies 29**
Banaszkiewicz, M., Zarnecki, J. C.	**Interaction of solar flare X-rays with the atmosphere of Titan 35**
Krivov, A., Jurewicz, A.	**The ethereal dust envelopes of the Martian moons 45**
Zamlutti, C. J.	**Long range collision effects for drifting velocity distributions 57**
Lorenz, R. D.	**Speed of sound in outer planet atmospheres 67**
Mamun, A. A., Salahuddin, M., Salimullah, M.	**Ultra-low-frequency electrostatic waves in a self-gravitating magnetized and inhomogeneous dusty plasma 79**
Krüger, H., Grün, E., Hamilton, D. P., Baguhl, M., Dermott, S., Fechtig, H., Gustafson, B. A., Hanner, M. S., Horányi, M., Kissel, J., Lindblad, B. A., Linkert, D., Linkert, G., Mann, I., McDonnell, J. A. M., Morfill, G. E., Polanskey, C., Riemann, R., Schwehm, G., Srama, R., Zook, H. A.	**Three years of Galileo dust data: II. 1993–1995 85**
Meisel, D. D., Richardson, J. E.	**Statistical properties of meteors from a simple, passive forward scatter system 107**
Delsemme, A. H.	**The deuterium enrichment observed in recent comets is consistent with the cometary origin of seawater 125**
Russell, C. T., Huddleston, D. E., Khurana, K. K., Kivelson, M. G.	**The fluctuating magnetic field in the middle jovian magnetosphere: initial Galileo observations 133**
Russell, C. T., Kivelson, M. G., Khurana, K. K., Huddleston, D. E.	**Magnetic fluctuations close to Io: ion cyclotron and mirror mode wave properties 143**

Vacher, J. R., Le Duc, E., Fitaire, M. — **Titan's atmosphere: possible clustering reactions of $HCNH^+$, $HCNH^+$ (N_2) and $HCNH^+$ (CH_4) ions with acetylene 151**

Shizgal, B. D. — **An analysis of O–H interaction potentials, O–H and O–D collision cross sections, and vibrational states 163**

Brunini, A. — **Stability of orbits within the Disc around the binary system BD+31°643 175**

Sephton, M. A., Pillinger, C. T., Gilmour, I. — **Small-scale hydrous pyrolysis of macromolecular material in meteorites 181**

Burchell, M. J., Thomson, R., Yano, H. — **Capture of hypervelocity particles in aerogel: in ground laboratory and low earth orbit 189**

Laxton, N. F., Balogh, A., Cowley, S. W. H., Dunlop, M. W., Hynds, R. J., McComas, D. J., Phillips, J. L. — **Ulysses observations of field-perpendicular plasma flows in the Jovian magnetosphere: comparison of ExB velocity vectors derived from energetic ion and thermal electron data 205**

Ishimoto, H., Mann, I. — **Modeling the particle mass distribution within 1 AU of the Sun 225**

Thébault, P., Brahic, A. — **Dynamical influence of a proto-Jupiter on a disc of colliding planetesimals 233**

Zolotov, M. Yu., Fegley, B., Jr., Lodders, K. — **Stability of micas on the surface of Venus 245**

Chen, F. Z., Judge, D. L., Wu, C. Y. R., Caldwell, J. — **Low and room temperature photoabsorption cross sections of NH_3 in the UV region 261**

Ifedili, S. O. — **Cosmic ray decreases and interplanetary disturbances during early November 1969 267**

Sarkar, S., Ghosh, S., Khan, M. — **Low frequency wave propagation in a cold magnetized dusty plasma 273**

Šimek, M., Pecina, P. — **Perseid meteor stream: cross and longitudinal structures from radar observations 281**

Planetary Pioneers
Arnold, J. R. — **Radionuclides produced by cosmic rays: the early years 293**

Book review 299

MARCH/APRIL

Publisher's Note for Readers iii

Whipple, F. L. — **Note on the structure of comet nuclei 301**

Kadono, T. — **Hypervelocity impact into low density material and cometary outburst 305**

Tambovtseva, L. V., Shestakova, L. I. — **Cometary splitting due to thermal stresses 319**

Erikson, A., Berthier, J., Denchev, P. V., Harris, A. W., Ioannou, Z., Kryszczynska, A., Lagerkvist, C.-I., Magnusson, P., Michalowski, T., Nathues, A., Piironen, J., Pravec, P., Šarounová, L., Velichko, F. — **Photometric observations and modelling of the asteroid 85 Io in conjunction with data from an occultation event during the 1995–96 apparition 327**

Gil-Hutton, R., Brunini, A. — **Collisional evolution of the early asteroid belt 331**

Su, Z.-Y., Wu, A.-M., Lee D., Ni, W.-T., Lin, S.-C. — **Asteroid perturbations and the possible determination of asteroid masses through the ASTROD space mission 339**

Cordero, G., Mendoza, B. — **Wind effects on the entry of meteorites into the atmosphere of Venus 345**

Edwards, H. G. M., Farwell, D. W., Grady, M. M., Wynn-Williams, D. D., Wright, I. P. — **Comparative Raman microscopy of a Martian meteorite and Antarctic lithic analogues 353**

Krüger, H., Grün, E., Landgraf, M., Baguhl, M., Dermott, S., Fechtig, H., Gustafson, B. A., Hamilton, D. P., Hanner, M. S., Horányi, M., Kissel, J., Lindblad, B. A., Linkert, D., Linkert, G., Mann, I., McDonnell, J. A. M., Morfill, G. E., Polanskey, C., Schwehm, G., Srama, R., Zook, H. A. — **Three years of Ulysses dust data: 1993–95 363**

Rannou, P., McKay, C. P., Botet, R., Cabane, M. — **Semi-empirical model of absorption and scattering by isotropic fractal aggregates of spheres 385**

Mocquet, A. — **A search for the minimum number of stations needed for seismic networking on Mars 397**

Dohm, J. M., Tanaka, K. L. — **Geology of the Thaumasia region, Mars: plateau development, valley origins, and magmatic evolution 411**

de Vanssay, E., McDonald, G. D., Khare, B. N. — **Evidence from scanning electron microscopy of experimental influences on the morphology of Triton and Titan tholins 433**

Palomba, E., Colangeli, L., Formisano, V., Piccioni, G., Cafaro, N., Moroz, V. — **The radiometric performances of the Planetary Fourier Spectrometer for Mars exploration 441**

Cordero, S. — **Convection in a rapidly rotating system: the small inclination limit and its planetary applications 451**

Liritzis, I., Preka-Papadema, P., Petropoulos, B., Banos, C., Kostopoulos, T. — **Spectrum analysis of Jupiter's great red spot parameters: area, rotation, latitude and longitude (1963–67) 469**

Tokano, T., Neubauer, F. M., Laube, M., McKay, C. P. — **Seasonal variation of Titan's atmospheric structure simulated by a general circulation model 493**

Russell, C. T., Huddleston, D. E., Khurana, K. K., Kivelson, M. G. — **Observations at the inner edge of the Jovian current sheet: evidence for a dynamic magnetosphere 521**

Wilkinson, W. P. — **Multiple encounters of a specularly reflected ion with planar quasi-perpendicular shocks 529**

Woodward, T. I., McKenzie, J. F. — **Stationary incompressible MHD perturbations generated by a current source in a moving plasma 545**

McKenna-Lawlor, S. M. P., Afonin, V. V. — **A flux enhancement measured in energetic particles (E 60–100 keV) by the EPONA instrument aboard Giotto close to P/Grigg-Skjellerup, and its interpretation as the signature of a companion comet 557**

Basiuk, V. A., Douda, J. — **Pyrolysis of simple amino acids and nucleobases: survivability limits and implications for extraterrestrial delivery 577**

Personal Review
Schröder, W. — **Wilhelm Foerster and the development of solar and cosmical physics 587**

MAY

Special Issue:
RIO DE JANEIRO INTERNATIONAL WORKSHOP ON PLANETARY SCIENCES

Brunini, A., Fernández, J. A. — **Numerical simulations of the accretion of Uranus and Neptune 591**

Parisi, M. G., Brunini, A. — **Dynamical constraints to the masses of large planetesimals 607**

Yokoyama, T. — **Dynamics of some fictitious satellites of Venus and Mars 619**

Espresate, J., Lissauer, J. J. — **The effect of collisions on the resonant satellite torque distribution 629**

Beaugé, C., Lemaître, A., Jancar, S. — **A second-order theory for resonance capture in corotation centers 643**

Roig, F., Ferraz-Mello, S. — **A symplectic mapping approach of the dynamics of the Hecuba gap 653**

Dvorak, R., Pilat-Lohinger, E. — **On the dynamical evolution of the Atens and the Apollos 665**

Poveda, A., Herrera, M. A., García, J. L., Curioca, K. — **The diameter distribution of Earth-crossing asteroids 679**

Martins, R. V. — **Collisional evolutionîan analytical study for the non steady-state mass distribution 687**

Angeli, C. A., Lazzaro, D., Florczak, M. A., Betzler, A. S., Carvano, J. M. — **A contribution to the study of asteroids with long rotational period 699**

Poveda, A., Herrera, M. A., García, J. L., Hernández-Alcántara, A., Curioca, K. — **The expected frequency of collisions of small meteorites with cars and aircraft 715**

Book review 721

JUNE/JULY

Special Issue:
46P/WIRTANEN: THE TARGET OF THE ROSETTA MISSION. OBSERVATIONS, MODELLING AND FUTURE WORK

Preface 723

Bertaux, J. L., Costa, J., Mäkinen, T., Quémerais, E., Lallement, R., Kyrölä, E., Schmidt, W. — **Lyman-alpha observations of comet 46P/Wirtanen with SWAN on SOHO: H_2O production rate near 1997 perihelion 725**

Benkhoff, J. — **Energy balance and the gas flux from the surface of comet 46P/Wirtanen 735**

Wegmann, R., Jockers, K., Bonev, T. — **H_2O^+ ions in comets: models and observations 745**

Epifani, E., Rotundi, A., Foster, M. J., Green, S. F., Colangeli, L., Fulle, M., Mennella, V., Palumbo, P. — **VRI imaging of comet 46P/Wirtanen 765**

Brucato, J. R., Colangeli, L., Mennella, V., Palumbo, P., Bussoletti, E. — **Silicates in Hale–Bopp: hints from laboratory studies 773**

Blanco, A., Fonti, S., Orofino, V. — **The 4.6 micron feature of –SiH groups in silicate dust grains and infrared cometary spectra 781**

Greenberg, J. M., Li, A. — **All comets are born equal: infrared emission by dust as a key to comet nucleus composition 787**

Crifo, J. F., Rodionov, A. V. — **Modelling the circumnuclear coma of comets: objectives, methods and recent results 797**

Fulle, M. — **Constraints on comet 46P/Wirtanen dust parameters provided by in-situ and ground-based observations 827**

Orosei, R., Capaccioni, F., Capria, M. T., Coradini, A., De Sanctis, M. C., Federico, C., Salomone, M., Huot, J.-P. — **Numerically improved thermochemical evolution models of comet nuclei 839**

De Sanctis, M. C., Capaccioni, F., Capria, M. T., Coradini, A., Federico, C., Orosei, R., Salomone, M. — **Models of P/Wirtanen nucleus: active regions versus non-active regions 855**

Rossi, A., Fulchignoni, M. **Study of the environment around the Rosetta candidate target asteroids 873**

REGULAR PAPERS

Herique, A., Kofman, W., Hagfors, T., Caudal, G., Ayanides, J.-P. **A characterization of a comet nucleus interior: inversion of simulated radio frequency data 885**

Kolesnikov, E. M., Boettger, T., Kolesnikova, N. V. **Finding of probable Tunguska Cosmic Body material: isotopic anomalies of carbon and hydrogen in peat 905**

Tsui, K. H. **Satellite capture by scattering of an existing massive planetary satellite 917**

Di Pippo, S., Mugnuolo, R., Vielmo, P., Prendin, W. **The exploitation of Europa ice and water basins: an assessment on required technological developments, on system design approaches and on relevant expected benefits to space and Earth based activities 921**

AUGUST/SEPTEMBER

Skorov, Yu. V., Rickman, H. **Gas flow and dust acceleration in a cometary Knudsen layer 935**

Siili, T., Haberle, R. M., Murphy, J. R., Savijärvi, H. **Modelling of the combined late-winter ice cap edge and slope winds in Mars' Hellas and Argyre regions 951**

Möhlmann, D. **Activity and nucleus properties of 46 P/Wirtanen 971**

D'Abramo, G., Dell'Oro, A., Paolicchi, P. **Gravitational effects after the impact disruption of a minor planet: geometrical properties and criteria for the reaccumulation 975**

Mahapatra, P. R., Ostro, S. J., Benner, L. A. M., Rosema, K. D., Jurgens, R. F., Winkler, R., Rose, R., Giorgini, J. D., Yeomans, D. K., Slade, M. A. **Recent radar observations of asteroid 1566 Icarus 987**

Varadi, F., Kaula, W. M. **Chaos in the 3:1 mean-motion resonance revisited 997**

McBride, N., McDonnell, J. A. M. **Meteoroid impacts on spacecraft: sporadics, streams, and the 1999 Leonids 1005**

Krüger, H., Grün, E., Heck, A., Lammers, S. **Analysis of the sensor characteristics of the Galileo dust detector with collimated Jovian dust stream particles 1015**

Landgraf, M., Müller, M., Grün, E. **Prediction of the in-situ dust measurements of the stardust mission to comet 81P/Wild 2 1029**

Surkov, Yu. A., Moskaleva, L. P., Shcheglov, O. P., Sheretov, E. P., Kremnev, R. S., Pichkhadze, K. M., Akulov, Yu. P., Dolgopolov, V. P. **Lander and scientific equipment for exploring of volatiles on the Moon 1051**

Ignatiev, N. I., Moroz, V. I., Zasova, L. V., Khatuntsev, I. V. — **Water vapour in the middle atmosphere of Venus: An improved treatment of the Venera 15 IR spectra 1061**

Courtin, R. — **The Raman signature of H_2 in the UV spectra of Uranus and Neptune: Constraints on the haze optical properties and on the para-H_2 fraction 1077**

Russell, C. T., Huddleston, D. E., Khurana, K. K., Kivelson, M. G. — **Structure of the Jovian magnetodisk current sheet: initial Galileo observations 1101**

Baronia, A., Tiwari, M. S. — **Kinetic Alfven wave in the presence of general loss-cone distribution function in inhomogeneous magnetoplasmaîparticle aspect analysis 1111**

Herbert, F., Sandel, B. R. — **Ultraviolet observations of Uranus and Neptune 1119**

Cottin, H., Gazeau, M. C., Raulin, F. — **Cometary organic chemistry: a review from observations, numerical and experimental simulations 1141**

Donn, B. — **Adventures in the unknown: A path of astronomical research and discovery 1163**

Book review 1171

OCTOBER/NOVEMBER

Special Issue:
NANTES SYMPOSIUM

Preface 1173

Hubbard, W. B., Guillot, T., Marley, M. S., Burrows, A., Lunine, J. I., Saumon, D. S. — **Comparative evolution of Jupiter and Saturn 1175**

Guillot, T. — **A comparison of the interiors of Jupiter and Saturn 1183**

Gudkova, T. V., Zharkov, V. N. — **Models of Jupiter and Saturn after Galileo mission 1201**

Gudkova, T. V., Zharkov, V. N. — **The free oscillations of Jupiter 1211**

Encrenaz, Th., Drossart, P., Feuchtgruber, H., Lellouch, E., Bézard, B., Fouchet, T., Atreya, S. K. — **The atmospheric composition and structure of Jupiter and Saturn from ISO observations: a preliminary review 1225**

Atreya, S. K., Wong, M. H., Owen, T. C., Mahaffy, P. R., Niemann, H. B., de Pater, I., Drossart, P., Encrenaz, T. — **A comparison of the atmospheres of Jupiter and Saturn: deep atmospheric composition, cloud structure, vertical mixing, and origin 1243**

Hueso, R., Sánchez-Lavega, A., Drossart, P. — **A theoretical study of parcel stability and cloud distribution in a Jovian hot spot 1263**

Sanchez-Lavega, A., Lecacheux, J., Colas, F., Rojas, J. F., Gomez, J. M. **Discrete cloud activity in Saturn's equator during 1995, 1996 and 1997 1277**

Brodbeck, C., Bouanich, J-P., van Thanh, N., Borysow, A. **The binary collision-induced second overtone band of gaseous hydrogen: modelling and laboratory measurements 1285**

Lunine, J. I., Yung, Y. L., Lorenz, R. D. **On the volatile inventory of Titan from isotopic abundances in nitrogen and methane 1291**

Coustenis, A., Schmitt, B., Khanna, R. K., Trotta, F. **Plausible condensates in Titan's stratosphere from Voyager infrared spectra 1305**

Coll, P., Coscia, D., Smith, N., Gazeau, M.-C., Ramírez, S. I., Cernogora, G., Israël, G., Raulin, F. **Experimental laboratory simulation of Titan's atmosphere: aerosols and gas phase 1331**

Lammer, H., Stumptner, W. **High altitude haze: Influence of monomer particles on Titan's temperature profile 1341**

Molina-Cuberos, G. J., López-Moreno, J. J., Rodrigo, R., Lara, L. M., O'Brien, K. **Ionization by cosmic rays of the atmosphere of Titan 1347**

Dandouras, J., Amsif, A. **Production and imaging of energetic neutral atoms from Titan's exosphere: a 3-D model 1355**

Strazzulla, G. **Ion irradiation experiments and nitrogen bearing species on Jovian and Saturnian icy surfaces 1371**

Chust, T., Roux, A., Perraut, S., Louarn, P., Kurth, W. S., Gurnett, D. A. **Galileo plasma wave observations of iogenic hydrogen 1377**

Dunlop, M. W., Dougherty, M. K., Kellock, S., Southwood, D. J. **Operation of the dual magnetometer on Cassini: science performance 1389**

DECEMBER

Special Issue:
RESULTS FROM THE 1998 WESTERN PACIFIC GEOPHYSICS MEETING: TERRESTRIAL PLANETS AND EARLY SOLAR SYSTEM EVOLUTION

Killen, R. M. **Foreword 1407**

Harmon, J. K., Campbell, D. B., Ostro, S. J., Nolan, M. C. **Radar observations of comets 1409**

Sasaki, S. **Presence of a primary solar-type atmosphere around the earth: evidence of dissolved noble gas 1423**

Coll, P., Guillemin, J-C., Gazeau, M-C., Raulin, F. **Report and implications of the first observation of C_4N_2 in laboratory simulations of Titan's atmosphere 1433**

Potter, A. E., Killen, R. M., Morgan, T. H. — **Rapid changes in the sodium exosphere of Mercury 1441**

Killen, R. M., Potter, A., Fitzsimmons, A., Morgan, T. H. — **Sodium D2 line profiles: clues to the temperature structure of Mercury's exosphere 1449**

Grard, R., Laakso, H., Pulkkinen, T. I. — **The role of photoemission in the coupling of the Mercury surface and magnetosphere 1459**

REGULAR PAPERS

Bruinsma, S. L., Exertier, P., Biancale, R. — **An assessment of new satellite total density data for improving upper atmosphere models 1465**

Christou, A. A., Beurle, K. — **Meteoroid streams at Mars: possibilities and implications 1475**

Cockell, C. S. — **Life on Venus 1487**

Lorenz, R. D., McKay, C. P., Lunine, J. I. — **Analytic investigation of climate stability on Titan: sensitivity to volatile inventory 1503**

Rosenberg, M., Salimullah, M., Bharuthram, R. — **Lower hybrid instability driven by charged dust beam 1517**

Kossacki, K. J., Markiewicz, W. J., Skorov, Y., Kömle, N. I. — **Sublimation coefficient of water ice under simulated cometary-like conditions 1521**

Vranješ, J. — **Tripolar vortex in plasma flow 1531**

PSS Referees 1537